

US EPA ARCHIVE DOCUMENT

6/21/83

034401  
SHAUGHNESSEY NO.

(11)  
REVIEW NO.

EEB BRANCH REVIEW

DATE: IN 4-27-83 OUT 6-21-83

FILE OR REG. NO. 5481-165

PETITION OR EXP. PERMIT NO. \_\_\_\_\_

DATE OF SUBMISSION 3-25-83

DATE RECEIVED BY HED 4-26-83

RD REQUESTED COMPLETION DATE 7-7-83

EEB ESTIMATED COMPLETION DATE 6-30-83

RD ACTION CODE/TYPE OF REVIEW 310/Amendment

TYPE PRODUCT(S): I, D, H, F, N, R, S Insecticide

DATA ACCESSION NO(S). \_\_\_\_\_

PRODUCT MANAGER NO. W. Miller (16)

PRODUCT NAME(S) Naled 8 Insecticide

COMPANY NAME Amvac Chemical Corporation

SUBMISSION PURPOSE Proposed conditional registration of  
various uses and label amendments

SHAUGHNESSEY NO. 34401 CHEMICAL, & FORMULATION Naled % A.I. 58

## Naled 8 Insecticide

## 100.0 Proposed Uses/Label Amendments

- 1) Change label format and precautionary statements to comply with the EPA label improvement program.
- 2) Delete Alfalfa and Alfalfa Seed from the label
- 3) Add Almonds to the label
- 4) Add aerial application to beans
- 5) Add concentrate spraying to certain crops
- 6) Increase rate on cotton and define water rate
- 7) Add airblast application and aerial application and thrips on grapes (California only)
- 8) Add Mushrooms to label
- 9) Add concentrate and aerial application to Oranges, Lemons, and Grapefruit (California only)
- 10) Add Lemon storage room applicatin to label
- 11) Add Safflower to label

(See new label - attached)

## 100.1 Application Rates/Methods for New Uses or Increased Rates

(A) Almonds

Apply once during dormant or delayed dormant period. Apply 1 pt. (0.9 lbs a.i.) per acre. Aerial application is not proposed.

(B) Cotton

Apply 1 to 1.5 pts (.9-1.35 lbs a.i.) per acre at 7-10 day intervals (no limit) by ground or air equipment. Old rates on cotton were 0.5 to 1 pints per acre.

(C) Mushrooms

Use 1 1/2 fl. oz. per 10,000 cubic feet (indoor).

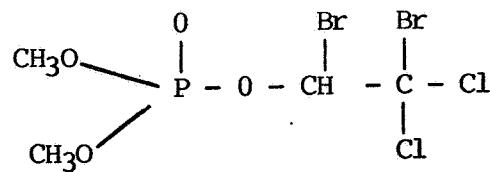
101.0 Chemical and Physical Properties (After Previous Review - Balcomb, 1978)101.1 Chemical Name

1, 2 dibromo - 2, 2 dichloroethyl dimethyl phosphate

101.2 Common Name

Naled Alternate Names: Bromchlophos, Bromex, CAS 300-76-5, Dibrom, ENT-24988, RE-4355

101.3 Structural Formula



101.4 Molecular Weight

C<sub>4</sub> H<sub>7</sub> Br<sub>2</sub> Cl<sub>2</sub> O<sub>4</sub> P = 381

101.5 Physical State

white, crystalline solid

101.6 Solubility (Environmental Chemistry - Mohawk Laboratory, 1972)

Water ..... <0.5% (5000 ppm)

Xylene ..... Completely miscible

Hexane ..... <8.0%

102.0 Behavior in the Environment

102.1 Soil

1/2 Life in Hours (R. Ney, EFB 2/71)

<u>Soil Type</u>	<u>10 ppm Naled</u>	<u>10 ppm DDVP</u>
Loam	4.0	5.8
Sandy Loam <sup>1</sup>	1.4	3.5
Silt	3.1	2.3
Sand	2.6	8.0

102.2 Water

1/2 Life in Hours<sup>2</sup>

<u>Temp</u>	<u>pH 5</u>	<u>pH 7</u>	<u>pH 9</u>
21°C	24.9	15.9	0.27
37°C	6.0	4.4	0.05

R. Ney, EFB, 3/20/75.

<sup>1</sup> A recent carbon-14 study (EAB, W. Garner, 2/16/82) indicated a soil half-life of 3 (aerobic) to 6 days (anaerobic).

<sup>2</sup> A recent photolysis study suggests a half-life of 42 hours (EAB, S. Creeger, 10/13/82).

102.4 Animal

"Levels of Naled in water declined to zero after 4 days while levels of DDVP increased to 0.0053-0.0250 after one day. No detectable levels of Naled showed up in fish analysis. After 1 hour exposure, DDVP residues showed up in fish at 2X. In mussels Naled accumulated to 1/2 X while DDVP showed no accumulation. Crabs showed no accumulation of Naled or DDVP.

Accumulation of Naled residues in marine organisms is not a problem."

R. Ney 4/22/76.

## 103.0 Toxic Properties

## 103.1 Mammals

Rat oral LD<sub>50</sub> = 430 mg/kg<sup>1</sup>

Rabbit oral LD<sub>50</sub> = 1100 mg/kg<sup>1</sup>

<sup>1</sup>Farm Chemicals Handbook, 1981, Meister Publishing Co., Willoughby, OH

## 103.2 Birds

<u>Species</u>	<u>LD50/LC50</u>
Mallard LD <sub>50</sub> <sup>1</sup>	52.2 mg/kg
Short-tailed Grouse LD <sub>50</sub> <sup>1</sup>	64.9 mg/kg
Canada Geese LD <sub>50</sub> <sup>1</sup>	36.9 mg/kg
Bobwhite LC <sub>50</sub> <sup>2</sup>	2117 ppm
Coturnix LC <sub>50</sub> <sup>2</sup>	1327 ppm
Ring-necked Pheasant LC <sub>50</sub> <sup>2</sup>	2538 ppm
Mallard LC <sub>50</sub> <sup>2</sup>	2724 ppm

<sup>1</sup> Tucker and Crabtree, 1970, USDI Res. Publ. 87

<sup>2</sup> Hill, E.F. et al., 1975, SSP 191, USDI

## 103.3 Aquatic Organisms (From USDI Res. Publ. 137)

<u>Species</u>	<u>96-h LC50 (Ug/L)</u>
Simocephalus	1.1 <sup>a</sup>
Daphnia pulex	0.4 <sup>a</sup>
Asellus	41
G. fasciatus	18

Palaemonetes	92 <sup>b</sup>
Pteronarcys	8
Cutthroat trout	127 <sup>b</sup>
Rainbow trout	195
Lake trout	87
Fathead minnow	3,300
Channel catfish	710
Bluegill	2,200 <sup>b</sup>
Largemouth bass	1,900 <sup>b</sup>

<sup>a</sup>48-h EC<sub>50</sub>.

<sup>b</sup>Tested in hard water, 162-272 ppm CaCO<sub>3</sub>.

#### 104.0 Hazard Assessment

#### 104.1 Incremental Exposure

Conditional registrations are sought for Naled on almonds (0.9 lbs a.i./A) and mushrooms (indoor). Label changes permitting aerial applications are requested for existing registrations on beans, citrus and grapes. An increase in the current rate on cotton is also proposed (0.9 to 1.35 lbs a.i./A).

Naled is currently registered on the following crops at the rates (active ingredient) shown:

<u>Crop</u>	<u>lbs.</u>	<u>Rate (Maximum)/Acre</u>
Cotton	0.9	
Melons	1.8	
Citrus	1.8	
Peaches (western)	1.8	
Rice	0.68	

Neither of the two new uses (almonds, mushrooms) are likely to significantly increase wildlife exposure. Mushrooms are an indoor crop essentially precluding immediate wildlife exposure and degradation is so rapid that transport from the site is unlikely. The almond use is not considered to significantly increase wildlife hazards over those currently registered by the Agency as: (1) almonds are a relatively small crop (276,000 acres - U.S. Dept. Comm. 1978) and (2) the use rate (0.9 lbs a.i./a) is not greater than rates presently registered for other crops.

The proposed rate increase ( 50%) on cotton is not considered likely to add a significant increment to existing wildlife exposure as current use on cotton is low and regional (24,000 lbs - California: McDowell et al., 1982, Insecticide Use on Cotton in the United States, USDA, NRE Report No. AGES820519) and higher rates are registered on melons, peaches and citrus.

The addition of aerial applications to grapes, citrus and beans may increase the probability of exposure via toxic drift to aquatic areas immediately adjacent to treated sites, however, pesticides as environmentally ephemeral as naled are considered unlikely to pose substantial risks to aquatic resources.

#### 104.2 Hypothetical Risk scenarios (almonds, cotton)

##### Terrestrial

Application of naled to almonds and cotton will result in residues on avian foods (insects, seeds, edible vegetation). Kenaga (1972) summarized residue (immediately after application) data for 22 pesticides. Based on his work I project below the maximum and typical (mean) residues that may occur on avian foods at the rates proposed for almonds, cotton (new rate) and the highest rate currently registered (citrus, melons, peaches).

PPM Naled - Immediately After Spray

	<u>Small Fruits</u>		<u>Alfalfa</u>	
	<u>Maximum</u>	<u>Typical</u>	<u>Maximum</u>	<u>Typical</u>
Almonds 0.9 lbs a.i./A	6.3	1.35	52.2	29.7
Cotton 1.35 lbs a.i./A	9.45	2.0	78.3	44.5
Citrus etc. 1.8 lbs a.i./A	12.6	2.7	104.4	59.4

Acute toxicity hazards may be estimated by comparing projected residues to the avian 5-day dietary LC<sub>50</sub>. By EPA regulations when residues are less than 1/5 the LC<sub>50</sub> specified uses are candidates for general use classification (i.e. no or minor hazards). The available avian dietary LC<sub>50</sub>'s range from 1327 to 2724 ppm (coturnix and mallard respectively). As the projected residues (maximum) are roughly 1/13 of the lowest LC<sub>50</sub> substantial hazards are not indicated. The short half-life indicates little potential for residue build-up or chronic effects.

This hypothetical exposure/risk analysis does not suggest that existing or proposed uses of naled present an unreasonable risk to birds.

##### Aquatic

A potential for acute poisoning of aquatic organisms is occasioned by runoff from treated fields carrying pesticide to ponds and streams adjacent to agricultural sites.

The Ecological Effects Branch utilizes a simplified watershed runoff model for calculating cotton-related water-pesticide contamination (T. Johnston, EEB Memo, 4-1-80). Using this model and the proposed increased use rate on cotton (1.35 lbs a.i./A) it can be calculated that naled residues in a small lake, vulnerable to pesticide runoff, may reach 13 ppb. Stevens (Ecological Effects Branch, Corn Cluster Project, 1983) used a somewhat more runoff-vulnerable small pond to simulate aquatic residues resulting from corn treatments. Using this model I find that the new proposed cotton maximum rate may result in aquatic residues as high as 31 ppb in small farm ponds. [The existing maximum cotton rate (1.0 lbs a.i./A), by these models, would result in aquatic residues ranging from 9.6 to 23 ppb].

Based on the available fish LC<sub>50</sub> values (87 - 3300 ppb) and short half-life of naled the aquatic residues projected (13 - 31 ppb) are not considered a significant threat to fish populations. Aquatic invertebrates, however, are highly sensitive to naled (LC<sub>50</sub>'s range 0.4-8 ppb) and may be reduced in waters adjacent to fields.

#### 104.3 Incremental Risk

Neither registered or proposed/amended uses of naled pose a significant hazard to terrestrial wildlife. Therefore, conditional registration of proposed uses and acceptance of label amendments will not add a significant increment to existing terrestrial hazards.

In my opinion the proposed uses and amendments likewise do not pose a significant increase in risks to aquatic organisms as: (1) almonds, the new use, is not a major crop (2) the increased cotton rate may affect aquatic invertebrates in waters immediately adjacent to treatment sites but existing cotton rates pose a similar hazard (3) several major uses are registered at higher rates (e.g. max. rate citrus, melons and peaches = 1.8 lbs a.i./a) (4) moreover, I feel it is most important to emphasize the apparent short half-life property of naled (soil and water) as a factor mitigating aquatic risks.

#### 105.0 Endangered Species

Effects on endangered species are considered for the amended use requiring an increase in application rate (cotton) and the new use involving outdoor exposure (almonds).

##### Cotton

Naled was reviewed under the Ecological Effects Branch Cotton Cluster Project. A potential for effects on endangered aquatic species was identified. EEB's Cotton Cluster report (including Naled) was forwarded to the Office of Endangered Species (OES) on January 26, 1983. An official reply is still pending. Use restrictions relative to endangered species are deferred until the receipt of the OES biological opinion.

Almonds

A recent (6-2-83) OES inquiring (J. Williams, OES Sacramento, CA, 8-448-2791, by D. Reider, Bravo [Shaun. No. 081901], 6-10-83) revealed that no endangered fish are in waters, adjacent to almond groves. Due to the short half-life of naled the pesticide is unlikely to transport from the site, therefore, it is concluded that the almond use does not pose an appreciable hazard to endangered fish.

106.0 Data Requirements

No data are required for the proposed amendments and uses.

107.0 Conclusions

The Ecological Effects Branch has completed an incremental risk analysis for the conditional registration of naled on almonds and mushrooms as well as label amendments for grapes, cotton, beans and citrus. Proposed uses and amendments do not substantially increase exposure and risks to non-target fish and wildlife over existing registrations.

Richard Balcomb  
Section 4  
Ecological Effects Branch, HED

Harry Craven      6/21/83  
Section Head No. 4  
Ecological Effects Branch, HED

Clayton Bushong  
Chief  
Ecological Effects Branch, HED

**Naled**

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Page \_\_\_\_\_ is not included in this copy.

Pages 9 through 17 are not included in this copy.

The material not included contains the following type of information:

- Identity of product inert ingredients.
  - Identity of product inert impurities.
  - Description of the product manufacturing process.
  - Description of product quality control procedures.
  - Identity of the source of product ingredients.
  - Sales or other commercial/financial information.
  - A draft product label.
  - The product confidential statement of formula.
  - Information about a pending registration action
  - FIFRA registration data.
  - The document is a duplicate of page(s) \_\_\_\_\_
  - The document is not responsive to the request.
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The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

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**ACCEPTED**

FEB 9 1979

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act,  
as amended, for the product(s)  
registered under S481-165  
EPA Reg. No.

# NALED 8 INSECTICIDE

Active Ingredients:  
\*Naled .....

By Wt.  
58.0%

Aromatic Petroleum Derivative Solvent .....

27.5 %

Inert Ingredients .....

14.5 %

\*1,2-dibromo-2,2-dichloroethyl dimethyl phosphate.  
Contains 8 pounds technical naled per gallon equivalent to 7.2  
pounds naled.

## READ THE LABEL

**DANGER:** Keep out of reach of children.  
See back panel for additional cautions.

**NET CONTENTS: ONE GALLON**

NS AND WITH APPLICABLE STATE AND FEDERAL REGULATIONS.  
U FOOD OR DRINK CONTAINERS.

RE UNLESS OTHERWISE NOTED:  
Fruit Crop—60 to 800 gals. Citrus—400 to 3,000 gals. (On Young

application,  
unless otherwise noted. Do not use with highly alkaline materials such as:

Lathoppers, Lygus Bugs, Alfalfa Webworms, Armyworms—1 pt per acre  
each. Thrips— $\frac{1}{2}$  pt per acre. Combine with recommended chemicals for  
ants, Spider Mites, Lygus, Leaf Miner, GREEN BEANS: Cover  
ponds, Woodland, LIVESTOCK PASTURES, FEED LOTS, AND PASTURES INCLUDING DAIRY CATTLE: Consult Your State Fish and Game Agency before  
over treatment and direct application to plants as injury may result. White Butterfly and Golden Rapture Aphids—Apply when aphids appear. Repeat as necessary. WARNING—Avoid  
Pointettias and Dutchman's Pipe may be injured by DIBROM spray.

FUIT FLIES (Drosophila sp.) in and around Food Processing Plants, Loading Docks, Cull Piles and Bulk Piles where insects congregate. Apply every 5 to 7 days as necessary. Do not apply to bulk fruit or refuse  
as a coarse spray to walls, floors, doorways, windows, and bulk piles where insects congregate. Apply every 5 to 7 days as necessary. Do not apply when foods are dried or  
exposed to be fed to livestock. Avoid contamination of feeds, foodstuffs and food containers during spraying.

Do not spray surfaces which will come into contact with foods. Cover food container during spraying.  
ADULT MOSQUITO, GNAT, STABLEFLY (Dog Fly), AND HOUSEFLY CONTROL—RESIDENTIAL AREAS, CROPS LISTED ON LABEL, TIDAL MARSHES,  
SWAMPS, WOODLAND, LIVESTOCK PASTURES, FEED LOTS, AND PASTURES INCLUDING DAIRY CATTLE: Consult Your State Fish and Game Agency before  
applying this product. It is not necessary to avoid farm buildings and dairy barns. Make applications during peak of infestation and repeat as necessary. See crop  
recommendations for use limitations near harvest. This same will kill shrimp. Do not apply to tidal or marsh waters which are important shrimp producing areas.  
RECOMMENDATIONS FOR USE: Do not apply to tidal or marsh waters which are important shrimp producing areas.  
AIRCRAFT: ~~DO NOT USE~~—Apply 0.8 to 1.1 oz. per acre diluted with water. Apply 2 to 8 gals of diluted spray per acre. Weight—Apply 1.6 to 4 fl. oz. per acre. Calibrate equipment (rate of travel and output) to apply 0.1 to 0.25 lb.  
Apply 2 to 6 qts of diluted spray per acre. MIST OR COLD FOG: Use 3 to 5 qts per 100 gals. Water. Calibrate equipment (rate of travel and output) to apply 0.1 to 0.25 lb.  
Technical Name: DIBROM. ~~DO NOT USE~~—1 pt. per acre by air or ground. By Air—Use 1.6 to 4 fl. oz. per acre.  
CORALS, ADJACENT PASTURES, HOLDING PENS (Dairy and Beef Cattle, Hogs, Sheep, Horses); Mosquitoes—Airplane Application—Use 1.6 to 4 fl. oz. per  
acre. Dilute 1 to 2½ pts in 10 gals water. Apply 1 gal diluted spray per acre. Apply over areas with animal present.  
CLOVER MITES, ROACHES, EARTWIGS, EARWIGS AND LEAFHOPPERS Outside Dwellings and in Lawns: Use 1 fl. oz. in 3 gals water. Apply to turf and to soil surfaces around  
flower shrubs and trees for general pest cleanup.

GRASSHOPPERS, Rangeland, Field Areas (crops listed on label) and Pastures including dairy pastures; Range Caterpillars on Rangeland and Pastures— $\frac{1}{2}$  to 1 pt. per acre by air or ground. Armyworms (except rice)—1 pt. per acre by air or ground. Arrows— $\frac{1}{2}$  pt. per acre by air or ground. ~~DO NOT USE~~—1 pt. per acre by air or ground. Animals may be present during treatment. See crop recommendations for use limitations near harvest. Forage  
areas should not be cut for hay to be sold or shipped interstate within 4 days of application.

DANGER: Concentrate may cause skin damage. Do not get on skin, eyes, or clothing. Causes eye damage. Use waterproof gloves and face shield  
or goggles when handling concentrate. Harmful if swallowed. Avoid breathing spray mist. In case of contact immediately remove contaminated clothing and flush skin or eyes with plenty of water; get medical attention. NOTE TO PHYSICIANS: Atropine is antitodal. 2, PAM is  
also antitodal and may be administered in conjunction with atropine. Avoid contamination of feed, foodstuffs and drinking water. DO NOT USE.  
POUR, SPILL OR STORE NEAR HEAT OR OPEN FLAME. Keep children and animals off treated areas. DO NOT SPRAY ON Nectarines, ornamental  
cherries, Liquidambar or Chrysanthemums as injury may occur. Do not store diluted spray. Make new dilution for each use. Wash equipment  
thoroughly after use.

This product is toxic to fish and wildlife. Birds feeding on treated areas may be killed. Keep out of lakes, streams or ponds. Shrimp and crab may be killed at application rates

recommended on this label. Do not apply when weather conditions favor drift of spray from areas treated. Rinse equipment

and containers and dispose of wastes by burying in noncroplands away from water supplies.

This product is highly toxic to bees exposed to direct treatment or residues on crops.

Protective information may be obtained from your Cooperative Agricultural Extension Service. Container should be disposed of by breaking and burying with wastes.

WHEN CONTAINER IS EMPTY, IMMEDIATELY WASH THOROUGHLY AND DESTROY. NEVER RE-USE.

CONDITIONS OF SALE: 1. Amvac Chemical Corporation warrants that this material conforms to the chemical description on the label and is reasonably fit for use as directed

herein. Amvac neither makes, nor authorizes, any agent or representative to make, any other other warranty of FITNESS or of MERCHANTABILITY,

representation, express or implied, concerning this material.

2. Critical and unforeseeable factors beyond Amvac's control prevent it from eliminating all risks in connection with the use of chemicals. Such risks include, but are not

limited to, damage to plants and crops to which the material is applied lack of complete control, and damage caused by drift to other plants or crops. Such risks occur even

though the material is applied to plants and crops to which the material is applied.

Buyer and user acknowledge and assume all risks and liability

(except those assumed by Amvac under 1 above) resulting from handling, storage, and use of this material.

AMVAC CHEMICAL CORPORATION, Los Angeles, Calif. 90023

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DIBROM • is a registered trademark of Chevron Chemical Company.

EPA EST. 5481-CA-1

EPA REG. NO. 5481-165-AA

19

## **NALED 8 INSECTICIDE**

EPA EST: 5481-CA-1

110

212

Helping the World Grow Better®



**ORTHO**

# DIBROM® 8 Emulsive

## Naled Insecticide

Active Ingredients	By Wt.
*Naled .....	58%
Light Aromatic Petroleum Distillate .....	20%
Inert Ingredients .....	22%

Contains 8 pounds technical naled per gallon equivalent to 7.2 pounds naled.

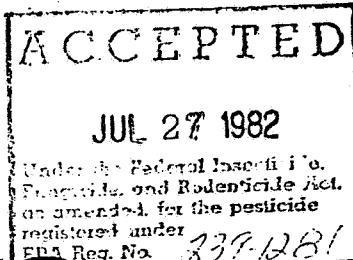
**KEEP OUT OF REACH OF CHILDREN**

### **DANGER**

FOR AGRICULTURAL USE ONLY OR FOR SALE TO, USE, AND STORAGE BY SERVICE PERSONS ONLY. DO NOT STORE IN AREAS ACCESSIBLE TO CHILDREN.

DO NOT TAKE INTERNALLY. DO NOT GET IN EYES. DO NOT GET ON SKIN.  
SEE SIDE PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS.

**NET CONTENTS 1 GALLON**



### **PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS & DOMESTIC ANIMALS**

#### **DANGER**

Concentrate causes eye and skin damage. Do not get in eyes, on skin or clothing. May be fatal if swallowed or absorbed through skin. Do not breathe spray mist. Use waterproof gloves and face shield or goggles when handling concentrate. Keep children and animals off treated areas.

#### **STATEMENT OF PRACTICAL TREATMENT**

In case of contact, immediately remove contaminated clothing and flush skin eyes with plenty of water. For eyes, get medical attention.

Note to Physicians: Emergency Information - call (415) 233-3737. Naled is a cholinesterase inhibitor. Atropine is antidotal. 2-PAM is also antidotal and may be used in conjunction with atropine. Mucosal damage may occur, and if gas lavage is indicated, it should be performed cautiously.

#### **ENVIRONMENTAL HAZARDS**

This product is toxic to fish, shrimp, crab, birds and other wildlife. Keep out of lakes, streams, ponds, tidal marshes and estuaries. Shrimp and crab may be killed at application rates recommended on this label. Do not apply where these are important resources. Do not apply where runoff is likely to occur. Do not apply when weather conditions favor drift from areas treated.

This product is highly toxic to bees exposed to direct treatment or residues on crops. Protective information may be obtained from your Cooperative Agricultural Extension Service.

#### **PHYSICAL OR CHEMICAL HAZARDS**

**COMBUSTIBLE.** KEEP OUT OF REACH OF CHILDREN. DO NOT USE OR STORE near heat, open flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed. Clean up spills immediately. Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot light, welding equipment and electrical motors and switches. Fire hazard is greater when liquid temperature rises above 85° F.

DO NOT heat this container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

#### **DIRECTIONS FOR USE**

It is a violation of Federal law to use this product in a manner inconsistent with labeling.

READ ENTIRE LABEL. USE STRICTLY IN ACCORDANCE WITH PRECAUTIONARY STATEMENTS AND DIRECTIONS, AND WITH APPLICABLE STATE AND FEDERAL REGULATIONS.

#### **STORAGE AND DISPOSAL**

##### **PROHIBITIONS**

Do not contaminate water, food or feed by storage, disposal or cleaning equipment.

Open dumping is prohibited. Do not reuse empty container.

##### **STORAGE**

Store in cool, dry place.

Keep pesticide in original container.

Do not put concentrate or dilute into food or drink containers.

Not for use or storage in or around the home.

Do not store diluted spray.

##### **PESTICIDE DISPOSAL**

Pesticide, spray mixture, or rinsate that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticides or buried in a safe place away from water supplies.

##### **CONTAINER DISPOSAL**

Triple rinse (or equivalent) and dispose of in an approved landfill or bury in a safe place.

##### **GENERAL**

Consult federal, state or local disposal authorities for approved alternative procedures.

**Chevron Chemical Company**

Ortho Agricultural Chemicals Division/San Francisco CA 94119 Richmond CA 94119  
Product 2738 Made in U.S.A.  
R Form 9219-J

EPA Reg. No. 239-1281-AA

CONTINUOUS FRUIT CROPS— $100 \text{ to } 1,000 \text{ gals. water}$  (or young fruit plants)—Use a minimum of 15 gal. water per acre.)

Where Recommended for AIR APPLICATION—Field Crops—3 to 10 gals.

A short residual contact insecticide for kill of insect and mite adults and larvae present at the time of application.

Begin application at first sign of insects. Repeat as necessary. Do not apply within 4 days of harvest unless otherwise noted. Do not use with highly alkaline materials such as lime or bordeaux.

Do not spray on Nectarines, Ornamental Cherries, Liquidambar or Chrysanthemums as injury may occur.

MIXING DIRECTIONS: Add to spray tank when  $\frac{1}{4}$  to  $\frac{1}{2}$  full with agitator running and maintain agitation until spraying is completed. Make new dilution for each use. Wash metal equipment thoroughly after use to avoid corrosion.

ALMONDS: Peach Twig Borer—Apply only once during the dormant or delayed-dormant period. Apply 1 pt. in combination with  $1\frac{1}{2}$  to 2 gals. supreme type oil or 2 to 3 gals. dormant oil spray per 100 gals. water in high gallonage spray equipment. Thorough coverage is required. Observe oil spray precautions.

BEANS, LIMA BEANS (Dry Form); BEANS, LIMA BEANS, PEAS (Succulent Form): Alfalfa Looper, Aphids, Spider Mites, Lygus, Leaf Miner; GREEN BEANS: Aphids, Spider Mites, Loopers, Nitidulids, Leafhoppers—1 pt. per acre in water to cover. 100 gals. per acre is preferable. Large Loopers, Stink Bugs— $1\frac{1}{2}$  pts. per acre in water to cover. Do not apply within 1 day of harvest. Do not feed treated vines.

BROCCOLI, CABBAGE, CAULIFLOWER, BRUSSELS SPROUTS, KALE, COLLARDS: Imported Cabbageworm, Diamond-Back Caterpillars, Aphids—1 pt. per acre. Looper—2 pts. per acre. Do not apply within 1 day of harvest.

CELERY: Aphids, Loopers, Armyworms, Salt Marsh Caterpillars, Leaf Miners—Use ground application only with fine mist spray—1 pt. in 50 to 75 gals. water per acre on plants less than  $\frac{3}{4}$  grown. On larger plants use  $1\frac{1}{2}$  pts. in 100 to 150 gals. water per acre. Do not apply within 1 day of harvest.

COTTON: Lygus— $\frac{1}{2}$  to 1 pt. per acre by air or ground. Leaf Perforator, Fleahoppers, Armyworms, Bollworms, Loopers and For Suppression of Mites—1 pt. per acre by air or ground. Apply at 7 to 10 day intervals while pests persist. FOR HEAVY POPULATION OF STED INSECTS—Use  $\frac{1}{2}$  pt. per acre by air or ground in control programs with other insecticides registered for use on cotton. Do not apply after first bolls open. Do not graze livestock in treated fields.

CUCUMBERS, SUMMER SQUASH: Cucumber Beetles, Aphids, Spider Mites, Loopers, Thrips, Armyworms—1 pt. per acre in water to cover. Pickleworms, Leaf Miners— $1\frac{1}{2}$  pts. per acre in water to cover. By Air—Use minimum of 10 gals. water per acre. May be used up to harvest.

EGGPLANT, PEPPERS: Aphids, Spider Mites, Blister Beetles, Flea Beetles, Leaf Miners, Whitefly—1 pt. per acre. May be used up to 1 day before harvest.

GRAPES: Drosophila, Leafhoppers— $\frac{1}{2}$  to  $\frac{3}{4}$  pt. per 100 gals. water (100 to 130 gals. diluted spray per acre depending on size of vines.) Use only  $\frac{1}{2}$  pt. per 100 gals. water in Muscat varieties. CAUTION: Post-bloom applications can cause fruit russetting. Do not use on Italia varieties as fruit injury may occur. Do not enter vineyards for 24 hours following treatment. Do not apply within 1 day of harvest.

TOPS: Aphids, Spider Mites, Corn Earworm, Hop Looper, Cutworm—1 pt. per acre. Do not apply within 4 days of harvest. Do not feed hopyard waste.

LONS (Cantaloupes, Honeydew, Muskmelons, Watermelons), PUMPKINS, WINTER SQUASH: Loopers, Armyworms, Leafhoppers, Spider Mites, Leaf Miners—1 to 2 pts. per acre (200 gals. diluted spray per acre.) May be used 1 day before harvest. Do not apply when temperature is over 90° F.

MUSHROOMS: Mushroom Flies (Phorid and Sciarid Adults)—Use  $1\frac{1}{2}$  fl. oz. per 0,000 cu. ft. as a vapor, fogging or aerosol treatment. Apply with aerosols or thermal fogging devices or dilute or undiluted formulations on steam pipes or hot plates. Direct air nozzles upward in mushroom house. Do not aim nozzle at mushrooms in the beds. Keep house closed for 30 to 60 minutes, but no longer than 4 hours during treatment. Adequately ventilate after treatment period. Daily applications may be required for heavy infestations for 10 to 20 days after spawning begins. For other infestations twice weekly applications are made when necessary. Do not use within 24 hours of harvest.

ORANGES, LEMONS, GRAPEFRUIT, TANGERINES: Aphids, Soft Brown Scale Crawlers, Mites, Citrus Cutworms, Leaf Roller (Tortrix)—1 pt. to 100 gals. water. Thrips (Bloom)— $\frac{1}{2}$  pt. per 100 gals. water. Use up to 7 days of harvest. (Calif. and Ariz.—Do not apply within 1 day of harvest.) Do not enter citrus groves for 24 hours following treatment.

EACHES (Western States Only): Lygus, Suppression of Mites, Peach Twig Borer, Oriental Fruit Moth— $\frac{3}{4}$  pt. to 100 gals. water. To avoid fruit spotting do not use within 30 days of harvest. Do not apply when temperature is over 90° F. Do not enter orchards for 24 hours following treatment.

ICE: Grasshoppers— $\frac{1}{2}$  to  $\frac{3}{4}$  pt. per acre. Apply at first sign of insects. Do not make more than 3 applications. May be used 2 days before harvest.

PINACH, CHARD, TURNIP GREENS: Aphids, Loopers, Armyworms, Salt Marsh Caterpillars, Leaf Miners—Use ground application only with fine mist spray—1 pt. in 50 to 5 gals. water per acre on plants less than  $\frac{3}{4}$  grown. On larger plants, use  $1\frac{1}{2}$  pts. in 100 to 150 gals. water per acre. May be used 1 day before harvest.

CAFFLOWER (California and Arizona only): Lygus— $\frac{3}{4}$  pt. per acre. By Air—In 3 to 10 gals. spray per acre. Do not apply within 30 days of harvest.

STRAWBERRIES: Leaf Roller, Spider Mites, Aphids, Omnivorous Leaf Tier, Spittlebugs—1 pt. per acre. May be used 1 day before harvest.

SUGAR BEETS: Spider Mites, Leafhoppers—1 pt. per acre by air or ground. By Air—Use 1 to 5 gals. water per acre. Do not apply within 2 days of harvest. Do not feed sugar beet tops.

OBACCO: Hornworm—1 pt. to 100 gals. water, using up to 200 gals. diluted spray per acre. Flea Beetles—1 pt. per acre in water to cover. Apply at first sign of insects. Repeat as necessary.

MATOES (Field): Fruit Flies (Drosophila)—1 pt. in no less than 40 gals. water per acre with ground sprayer, 7 to 10 gals. by air. Make first application 5 to 7 days before first picking and continue at 5 to 7 day intervals until the day before harvest. (Field and Greenhouse): Tomato Fruit Worm, Hornworms, Leaf Miners, Flea Beetles, Mites—1 pt. in 100 gals. water. Spray plants thoroughly. For Field—Use up to 200 gals.

DO NOT USE ON FRUIT IN GREENHOUSE OR HOTHOUSE.

GREENHOUSE, VAPOR TREATMENT OF ROSES, OTHER ORNAMENTAL PLANTS, TOMATOES, CUCUMBERS: Spider Mites, Adult Whiteflies, Aphids, Leafrollers, Mealybug—1 fl. oz. per 10,000 cu. ft. when plants are dry. Apply undiluted on heat pipes (or in open pans on hot plates). Apply continuously or to intermittent sections of pipe on each side and on 1 or more of the pipes through center of each range depending upon width. Application to cold pipes should be followed by immediately heating pipes to 160° F. In steam heated houses, close vents for at least 1 hour after pipes are hot. With hot water systems, close house for at least 3 hours. Houses may remain closed overnight following treatment. When application is made to hot pipes, wear goggles and approved respirator. Ventilate house before workers re-enter. Wear respirator when entering treated houses to ventilate. Protect hives of bees in cucumber and other houses by covering with plastic or rubber sheet during treatment and until house is ventilated. Do not apply to tomatoes or cucumbers closer than 1 day before harvest. Spider Mites (Resistant and Non-resistant)—Make 3 to 4 treatments at 3 or 4 day intervals. Repeat as necessary. Adult Whiteflies—Make 2 applications at 7 day intervals. Repeat as necessary. Aphids—Apply when aphids appear. Repeat as necessary.

WARNING—Avoid overtreatment and direct application to plants as injury may result. White Butterfly and Golden Rapture Roses, Pink Champagne Chrysanthemums, Green Wandering Jew, Poinsettias and Dutchman's Pipe may be injured by DIBROM vapor.

FOREST AND SHADE TREES: CONIFERS (Arborvitae, Douglas Fir, Fir, Hemlock, Juniper, Pine, Spruce): Suppression of Two-Spot and Red Spider Mites, Aphids, Spittlebugs, Zimmerman Moths, Juniper Webworms, Tussock Moths, Spruce Budworms, Adult Sierra Fir and Western Hemlock Bark Borers. BROADLEAF TREES (Ash, Birch, Black Walnut, Box Elder, Dogwood, Elm, Evergreen Pear, Flowering Plum and Quince, Locust, Magnolia, Maple, Oak, Sycamore, Willow): Suppression of Two-Spot and Red Spider Mites, Aphids, Leaf Miners, Thrips, Elm Leaf Beetles, California Oakworms (California only). Spring and Fall Cankerworms, Fall Webworm, Oak Webworm, and Tussock Moths—1 pt. in 100 gals. water. Use when infestation is evident, repeat as necessary.

FRUIT FLIES (Drosophila sp.) in and around Food Processing Plants, Loading Docks, Cull Piles and Refuse Areas, Cider Mills—Use 2 oz. in  $2\frac{1}{2}$  gals. water (5 pints to 10 gals.) as a coarse spray to walls, floors, doorways, windows, refuse and cull piles where insects congregate. Apply every 5 to 7 days as necessary. Do not apply to cull fruit or refuse piles to be fed to livestock. Avoid contamination of feeds, foodstuffs and food-processing machinery. Do not apply when plants are in operation or when foods are present or exposed. Do not spray surfaces which will come into contact with foods. Cover food containers during spraying.

GNAT, STABLE FLY (Dog Flies), AND HOUSE FLY CONTROL—RESIDENTIAL AREAS.

CROPS LISTED ON LABEL, SWAMPS, WOODLAND: Consult your State Fish and Game Agency before applying this product. It is not necessary to avoid farm buildings. Make applications during peak of infestation and repeat as necessary. See crop recommendations for use limitations near harvest. This rate of application will kill shrimp. Do not apply to tidal or marsh waters which are important shrimp producing areas. AIRCRAFT: East—Apply 0.8 to 4 fl. oz. per acre diluted with water. Apply 2 to 8 qts. of diluted spray per acre. West—Apply 1.6 to 4 fl. oz. per acre diluted with water. Apply 2 to 8 qts. of diluted spray per acre. MIST OR COLD FOG: Use 3 to 5 qts. per 100 gals. water. Calibrate equipment (rate of travel and output) to apply 0.1 to 0.25 lb. technical naled per acre.

ADULT MOSQUITO CONTROL—RESIDENTIAL AREAS, CROPS LISTED ON LABEL, SWAMPS, WOODLAND AND LIVESTOCK PASTURES INCLUDING DAIRY CATTLE: Consult your State Fish and Game Agency before applying this product. Make applications during peak of infestation and repeat as necessary. See crop recommendations for use limitations near harvest. Treat shrubbery and vegetation where mosquitoes may rest. Shrubbery and vegetation around stagnant pools, marshy areas, ponds and shore lines may be treated. Direct application to water is prohibited. This rate of application will kill shrimp. Do not apply to tidal or marsh waters which are important shrimp producing areas. AIRCRAFT: East—Apply 0.8 to 1.6 fl. oz. per acre diluted with water. Apply 2 to 8 qts. of diluted spray per acre. WEST—Apply 1.6 fl. oz. per acre diluted with water. Apply 2 to 8 qts. of diluted spray per acre. MIST OR COLD FOG: Use 3 to 5 qts. per 100 gals. water. Calibrate equipment (rate of travel and output) to apply 0.1 lb. technical naled per acre. Do not make more than one application every 10 days to pastures or other areas where lactating dairy animals are being held.

REDUCTION OF LIVESTOCK PESTS—Gnat, Stable Fly (Dog Fly), Housefly, Mosquito; Horn Fly (Central and North Central U.S.) IN CORRALS, HOLDING PENS, FEEDLOTS AND RANGELAND CONTAINING DAIRY AND BEEF CATTLE, HOGS, SHEEP AND HORSES: AERIAL APPLICATION: Apply 4 fl. oz. diluted with 8 fl. oz. of water (total of 12 fl. oz.) per acre (0.25 lb. technical naled per acre). GROUND APPLICATION: Use 5 pts. per 100 gals. water. Apply with a mist blower or similar equipment as a space treatment. Calibrate equipment (rate of travel and output) to apply 0.25 lb. technical naled per acre (approximately 5 gals. of diluted spray).

CLOVER MITES, ROACHES, EARWIGS AND LEAFHOPPERS—Outside Dwellings and In Lawns: Use 1 fl. oz. in 3 gals. water. Apply to turf and to soil surfaces around flowers, shrubs, and trees for general pest cleanup.

GRASSHOPPERS, RANGE CATERPILLARS: Rangeland— $\frac{1}{2}$  to  $\frac{3}{4}$  pt. per acre by air or ground. Young Grasshoppers— $\frac{1}{2}$  pt. per acre by air or ground. Armyworms—1 pt. per acre by air or ground. By Air—Use 1 to 5 gals. water per acre. Apply when hoppers hatch is completed. Repeat as necessary. Animals may be present during treatment. Do not graze lactating dairy animals on treated areas.

CONDITIONS OF SALE: 1. Chevron Chemical Company (Chevron) warrants that the material conforms to the chemical description on the label and is reasonably fit for use as directed hereon. Chevron neither makes, nor authorizes any agent or representative to make, any other warranty of FITNESS or of MERCHANTABILITY, guarantee or representation, express or implied, concerning this material.

2. Critical and unforeseeable factors beyond Chevron's control prevent it from eliminating all risks in connection with the use of chemicals. Such risks include, but are not limited to, damage to plants and crops to which the material is applied, lack of complete control, and damage caused by drift to other plants or crops. Such risks occur even though the product is reasonably fit for the uses stated hereon and even though label directions are followed. Buyer and user acknowledge and assume all risks and liability (except those assumed by Chevron under 1 above) resulting from handling, storage, and use of this material.

22